UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: February 17, 1983

SUBJECT: Revision of the ARCO - Kuparuk PSD Permit

FROM: Paul Boys, Senior Chemical Engineer
Rob Wilson, Regional Meteorologist

TO: Mike Johnston, Chief
Air Operations Section

THRU: Dan Bodien, Team Leader
Technical Support Team

ARCO Alaska, Inc., requested a revision to their PSD permit for the Kuparuk project, (PSD Permit No. PSD-X82-01), because they have changed the process configuration somewhat. We have reviewed the effect of these changes on both the BACT and air quality analyses for the Kuparuk project. The conclusions and recommended changes to the permit are discussed below:

BACT/Emission Limitations

The latest process configuration has changed the mix of turbines and heaters so that the total emissions are lower than previously permitted. Since there has been no change in the emission limitations representative of BACT for turbines and heaters, the only change necessary is to adjust the total tons per year limitations for these sources. These new emission limitations are shown in the attached table.

The new configuration includes a general waste incinerator that was not originally proposed. The incinerator by itself is a relatively small source; but because it does emit the pollutants which are subject to PSD review, a BACT analysis is required. The Company proposed to meet the Alaska regulation of 0.15 gr/dscf and 20% opacity. Based on current designs for waste incinerators, lower particulate emissions are achievable without add-on control devices. For example, the Puget Sound Air Pollution Control Agency has found from source tests that new incinerators can readily meet the agency emission limitation of 0.10 gr/dscf at 12% CO_2. In addition, an opacity limitation of 10% is achievable if the incinerator is properly operated. Therefore, the particulate emission limitation representative of BACT for the waste incinerator is 0.10 gr/dscf at 12% CO_2 and 10% opacity.

Maximum Allowable Emissions - ARCO, Kuparuk

Equipment	Pollutant	Emission Limitation (T/yr.)
Gas Turbines	NO_x	13,730
	VOC	50
	CO	2,730
	PM	293
	SO_2	72
Process Heaters	NO_x	384
	VOC	0.5
	CO	42
	PM	39
	SO_2	9
Waste Incinerator	NO_x	8
	VOC	0.5
	CO	17
	PM	5
	SO_2	4
Performance Limit for the Waste Incinerator	PM	0.01 gr/dscf at 12% CO_2, and 10% opacity

The only control technique for the other pollutants is proper combustion. The emission limitations for the other pollutants are calculated based on AP-42 emission factors and shown in the attached table.

Air Quality Impacts

From an air quality standpoint there are three important general changes in ARCO's new proposal which can affect impact estimates relative to the former proposal. First is that there is an overall small decrease in emissions which would tend to improve air quality slightly. Second, however, the number of source locations has been reduced from four to three. A reduction in the spatial separation of the emission points would tend to increase impacts. And third, there are fewer small heaters in the new proposal. The smaller heaters have a lower estimated plume rise and thus a relatively higher ground-level impact; this would tend to improve air quality.

The Company re-analyzed the air quality impacts using the same modeling techniques which were approved in the original permit. The results of the new modeling analysis indicated that the proposed changes in the process configuration will not significantly increase the predicted maximum air quality impacts over the previous estimates. Apparently, the effect of combining the source locations on maximum impacts will be offset by the reduction in emissions and the number of small heaters. Therefore, the conclusions of the air quality review remain unchanged.